A Software Architecture Supporting the Acquisition of Joint Capability

Common vs. Tailored Requirements

- Roughly 2 types of requirements
  - Common for everyone
  - Tailored for the service or user community
- C4ISR systems may have higher percentage of common requirements
- Size, weight, power, environment, HMI must be tailored in the end item

There is value in the commons

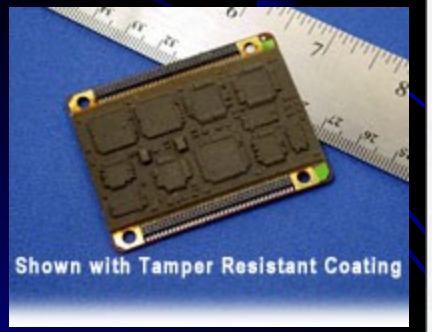
- Improvements in interoperability
- Reduced total ownership costs

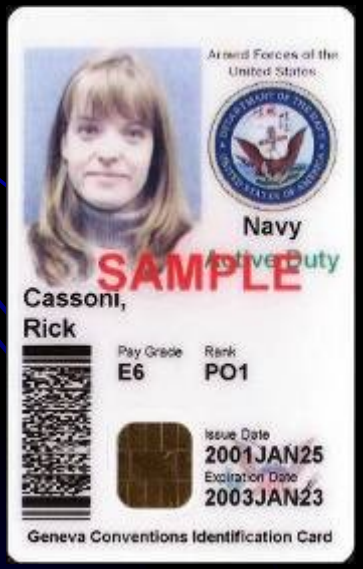
However ...

- System level effects may rule
- HMI (user interfaces) must be engineered in from the start

Forced Commonality

- GPS SAASM
- Common Access Card
  - Works well on the desktop
  - Not so well elsewhere





What supports the Commons?

- Scalable system architectures
- Design modularity

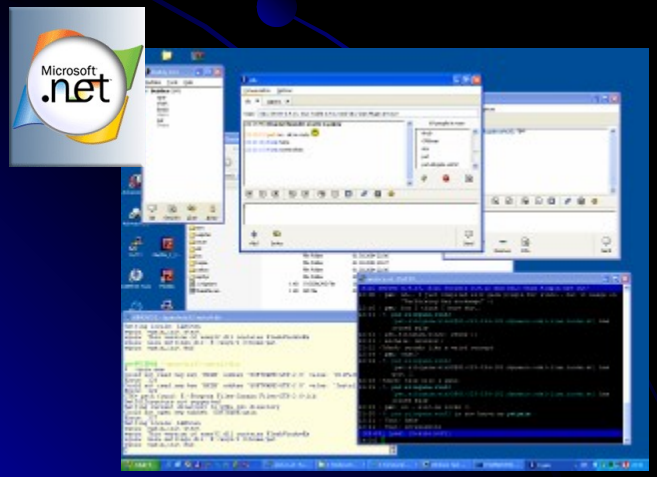
- Software is a unique technology for implementing these design attributes
  - Software is size, weight, and power agnostic
  - Software can be designed for scalability and modularity
  - Software architectures support reuse and flexibility

Linux OS demonstrates these attributes

- Originated as a PC Unix clone in an academic environment
- Evolved from an Intel x86 only OS to a highly portable, scalable software system
- Now found in mobile handsets, desktop workstations, mainframes, and supercomputers

Common Desktop Operating Environments

- Microsoft WIN32 API, COM, .NET provide common (but proprietary) architecture for commodity personal computers
- Modern UNIX Desktop OEs
  - GNOME
  - KDE
  - Apple's OS X

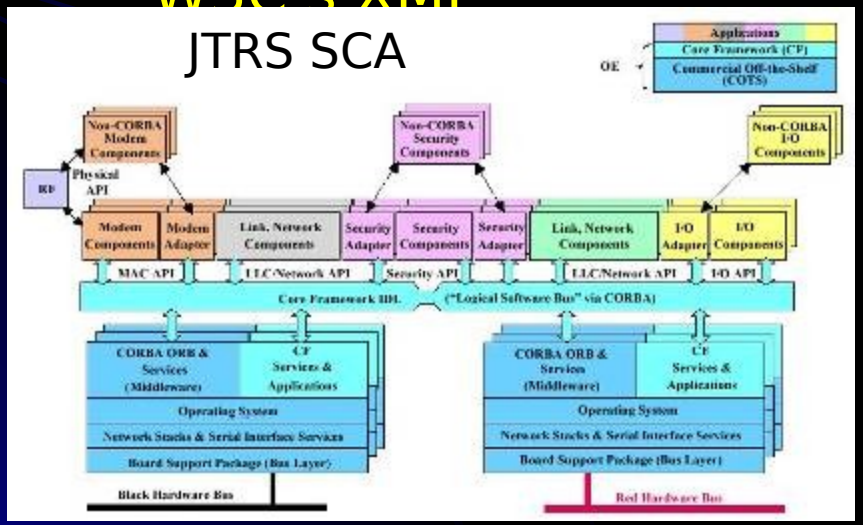


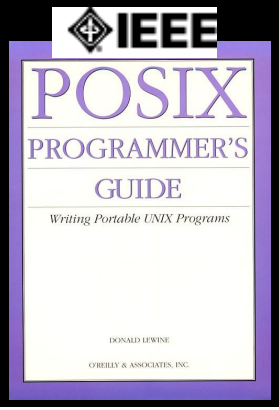
The JTRS Software Architecture

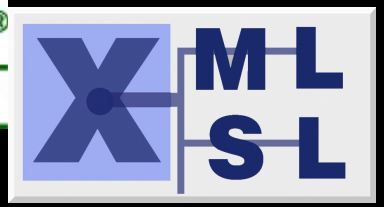
- A robust communications infrastructure
- Portable API
- Common operating environment
- Supports true Software Defined Radio features (digital to t

JTRS Software Communications Architecture

- Architecture spec supporting application porting, modularity, scalability
- Industry developed, based on mature standards
  - OMG's CORBA
  - IEEE POSIX
  - W3C's XML







Emerging Commercial SDR

- SDR Forum promoting growth of the military and commercial standards
- FCC and NTIA rule making and certification processes
- Wireless providers pursuing solutions for handheld and base station markets

Standards must evolve

- SCA undergoing continued development
  - Resolving problems discovered during implementation
  - Inserting technology
  - Moving into specialty computing devices
  - Reducing overhead and processing footprint